

P & N-Channel 30-V (D-S) MOSFET

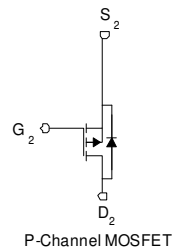
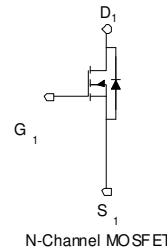
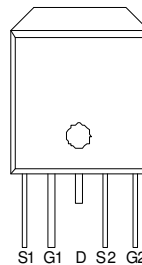
These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m Ω	I_D (A)
30	39 @ $V_{GS} = 4.5V$	30
	29 @ $V_{GS} = 10V$	36
-30	29 @ $V_{GS} = -4.5V$	-36
	22 @ $V_{GS} = -10V$	39

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe DPAK saves board space
- Fast switching speed
- High performance trench technology



RoHS
COMPLIANT
HALOGEN
FREE



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	N-Channel	P-Channel
Drain-Source Voltage		V_{DS}	30	-30
Gate-Source Voltage		V_{GS}	± 20	± 20
Continuous Drain Current ^a	$T_A = 25^\circ\text{C}$	I_D	36	-39
	$T_A = 70^\circ\text{C}$		30	-32
Pulsed Drain Current ^b		I_{DM}	40	-40
Continuous Source Current (Diode Conduction) ^a		I_S	30	-30
Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	50	50
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	3.0	$^\circ\text{C/W}$

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

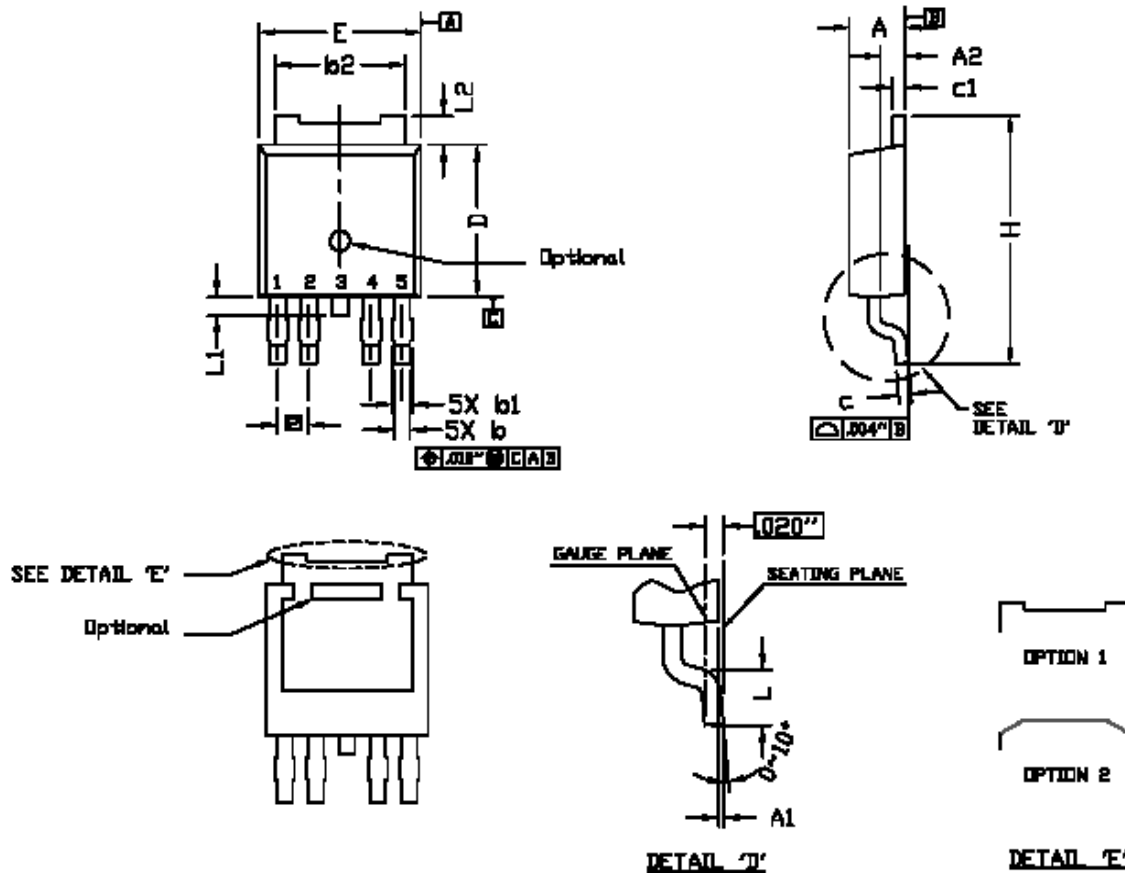
SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED)								
Parameter	Symbol	Test Conditions	Limits				Unit	
			Ch	Min	Typ	Max		
Static								
Gate-Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = 250 uA	N	0.6			V	
		V _{GS} = V _{DS} , I _D = -250 uA	P	-0.6				
Gate-Body Leakage	I _{GSS}	V _{GS} = -20 V, V _{DS} = 0 V	P			±100	nA	
		V _{GS} = 20 V, V _{DS} = 0 V	N			±100		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24 V, V _{GS} = 0 V	P			-1	uA	
		V _{DS} = 24 V, V _{GS} = 0 V	N			1		
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	N	20			A	
		V _{DS} = -5 V, V _{GS} = -10 V	P	-20				
Drain-Source On-Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 6.9 A	N			29	mΩ	
		V _{GS} = 4.5 V, I _D = 6 A				39		
		V _{GS} = -10 V, I _D = -5.2 A	P			22		
		V _{GS} = -4.5 V, I _D = -4.2 A				29		
Forward Tranconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 6.9 A	N		25		S	
		V _{DS} = -15 V, I _D = -5.2 A	P		10			
Dynamic								
Total Gate Charge	Q _g	N-Channel V _{DS} =15V, V _{GS} =10V, I _D =6.9A	N		6.0		nC	
Gate-Source Charge	Q _{GS}		P		10			
		N		1.0				
		P		2.4				
Gate-Drain Charge	Q _{gd}	V _{DS} =-15V, V _{GS} =-10V, I _D =-5.2A	N		1.5		nC	
			P		3.9			
Turn-On Delay Time	td(on)	N-Chaneel V _{DD} =15V, V _{GS} =10V, I _D =1A , R _{GEN} =6Ω	N		7.4		nS	
Rise Time	tr		P		7.6			
		N		4				
		P		6.8				
Turn-Off Delay Time	td(off)	V _{DD} =-15V, V _{GS} =-10V, I _D =-1A R _{GEN} =6Ω	N		22.2			nS
			P		33.6			
Fall-Time	tf		N		3.6			
			P		23.2			

Notes

- Pulse test: PW ≤ 300µs duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

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TO252_4L PACKAGE OUTLINE



NOTE

1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS. MOLD FLASH SHOULD BE LESS THAN 6 MIL.
2. DIMENSION L IS MEASURED IN GAUGE PLANE.
3. TOLERANCE 0.10 mm UNLESS OTHERWISE SPECIFIED.
4. CONTROLLING DIMENSION IS MILLIMETER. CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.
5. REFER TO JEDEC TO-252 (AD).

SYMBOL	DIMENSION IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	2.184	2.288	2.388	0.086	0.090	0.094
A1	0.000	—	0.127	0.000	—	0.005
A2	0.889	—	1.143	0.035	—	0.045
b	0.508	—	0.711	0.020	—	0.028
b1	0.584	—	0.787	0.023	—	0.031
b2	4.953	—	5.461	0.195	—	0.215
c	0.457	0.508	0.610	0.018	0.020	0.024
c1	0.457	—	0.610	0.018	—	0.024
D	5.969	6.096	6.223	0.235	0.240	0.245
E	6.350	6.604	6.731	0.250	0.260	0.265
e	1.270 BSC.			0.050 BSC.		
H	9.398	—	10.414	0.370	—	0.410
L	1.270	—	2.032	0.050	—	0.080
L1	—	—	1.018	—	—	0.040
L2	0.889	—	1.270	0.035	—	0.050